

SCIENTIFIC MALAYSIAN

ISSUE 1 / 2011

INTRODUCING SCIENTIFIC MALAYSIAN

Find out more about the project, our missions/strategies and future plans.

FREE RANGE/ ORGANIC EGGS

Is it as 'green and clean' as it is marketed to be, or is there a sinister secret good-intentioned consumers are unaware of?



UNIVERSITY RANKINGS

To be or not to be?



PERDANA UNIVERSITY

Facilitating translational biomedical research in Malaysia



HIGGS AND THE KITTEN

What does a kitten have to do with Higgs boson?

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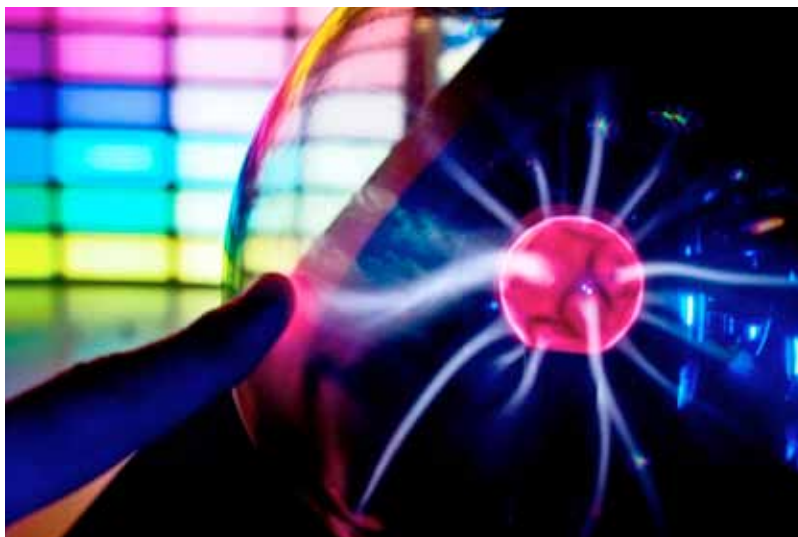
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A plasma ball at the Pusat Sains Negara (National Science Centre), Malaysia.

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SCIENTIFIC MALAYSIAN MAGAZINE is published in a web format (<http://magazine.scientificmalaysian.com>) and in a downloadable digital magazine format (PDF). Our digital magazines are distributed to Malaysian societies around the world to reach out to as many Malaysian scientists as possible. The Scientific Malaysian Magazine will be published 3 times a year and is free of charge.

THE FIRST ISSUE

From building a Malaysian scientific network to the birth of a magazine that represents the voice of Malaysian scientific community: that is the path taken by the Scientific Malaysian team. It was not an easy task for us - we had various brainstorming sessions, discussions, meetings to discuss issues related to the Scientific Malaysia project and not to mention, the publication of this magazine. However, it is all worthwhile. Looking at this magazine now, we know our hard work has paid off, setting us on a path towards greater goals.

We start off our magazine with an article on what the Scientific Malaysian project is all about and what we hope to achieve from it. This gives our readers a much needed introduction to this project and how they can join or contribute to the project. Following that, we have a feature article covering the newly-launched Perdana University School of Graduate Medicine, a graduate medical teaching school in Malaysia set up in partnership with the prestigious John Hopkins School of Medicine in the United States. We also have opinion articles ranging from issues related to the academia (University Rankings - pg 14) to an interesting piece on free-range chicken eggs (Free-Range/Organics Eggs - pg 17). However, it is not all serious articles for our magazine, as we have also included a light-hearted piece written by a Malaysian working at CERN, the European Organisation for Nuclear Research (Higgs and Kitten - pg 24) and the first part of a short story about a molecular biologist (The Detective - pg 26). Don't miss out our Featured Members section too, where we highlight some of our members and their research profiles.

Last but not least, I would like to take this opportunity to thank everyone who has contributed to this magazine, either directly or indirectly. The Scientific Malaysian team welcomes any feedback on our magazine, so please do not hesitate to contact us.

Enjoy reading!

Andrew Chan, founder

WRITE FOR SCIENTIFIC MALAYSIAN MAGAZINE

Would you like to contribute articles for Scientific Malaysian Magazine? We welcome articles on any aspect of scientific research and development.

Please get in touch with us:
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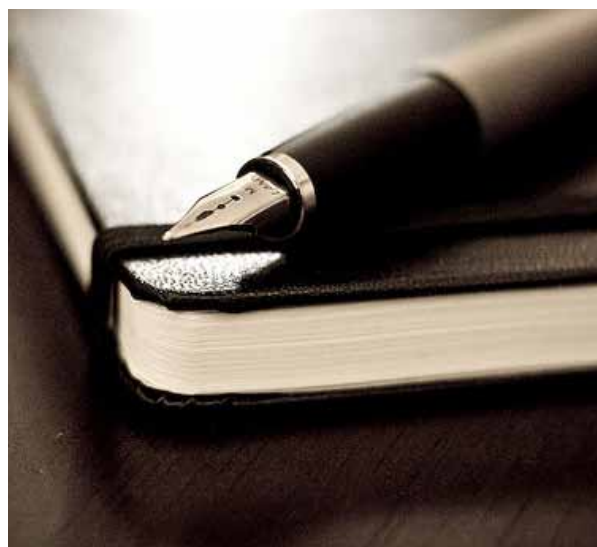


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MEET THE TEAM



ANDREW CHAN (FOUNDING PRESIDENT / EDITOR-IN-CHIEF) holds a BSc(Hons) in Biochemistry from the University of Bristol, UK. He is currently pursuing his DPhil in Chemical Biology at the University of Oxford, working on the cellular oxygen sensing mechanism in humans/animals. Previously, he has worked in the Weatherall Institute of Molecular Medicine (University of Oxford, UK) and did summer internships at the MRC Laboratory of Molecular Biology (Cambridge, UK) and Celltech Pharmaceuticals Ltd. (now known as UCB-Celltech) in Slough, UK. He feels that establishing a career in science (and related fields) is often filled with obstacles and challenges, hence establishing a network that connects all Malaysian scientists/engineers could develop mutual co-operations. He also believes that despite being abroad, many Malaysians are still keen in contributing back to the Malaysian community and hopes that the Scientific Malaysian project serves as a bridge for this purpose.



DR WONG KAH KENG (VICE PRESIDENT / EDITOR) obtained his BSc (1st Hons) in Biohealth Science from the University of Malaya, Malaysia and later pursued for his DPhil in Medical Sciences at the University of Oxford under the tutelage of Professor Alison Banham. He has worked in University of Malaya (Faculty of Medicine) and Citibank (both consumer and corporate departments) in Kuala Lumpur. He is currently a Principal Investigator / University Lecturer at the Dept. of Immunology, USM. His current area of research lies in the molecular basis of B-cell lymphomas and uncovering the functions of novel molecules in the disease. He hopes that the Scientific Malaysian project could be one of the most sustainable and accessible platforms, without boundary and inessential barrier, to communicate directly with Malaysian researchers worldwide.



BEATRICE CHIN HUI TZE (EDITOR) did her BSc in Biotechnology in Monash University Malaysia. She has also worked in the teaching lab for Monash University. After deciding to pursue a career in writing, Beatrice now works in medical publishing, where she spends her 9 to 5 churning out articles aimed at Malaysia's medical community. She thinks that the Scientific Malaysian project is an interesting way to reach out to the Malaysian scientific community. It also provides a good opportunity to network and learn new things. She believes that Scientific Malaysian has the potential to grow into something great with the support of its members.

INTERESTED IN JOINING THE SCIENTIFIC MALAYSIAN TEAM?

Enhance your CV

Improve your networking skills

Flexible working hours

Work from anywhere

Work in any areas of the project

BE PART OF US.



CONTACT US: team@scientificmalaysian.com

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SCIENTIFIC MALAYSIAN

An introduction to Scientific Malaysian, a worldwide Malaysian scientific network.

by Andrew Chan



SCIENTIFIC MALAYSIAN is created as a platform to connect Malaysian scientific researchers across the world to discuss research issues in Malaysia, to promote collaboration and to establish network. Regardless of whether they are in the applied sciences (engineers, biomedical scientists) or pure sciences (biologists, chemists, physicists), anyone involved in research and development is welcome to join our community. Researchers and administrators from the industry are also encouraged to join and contribute ideas and viewpoints from the industrial perspective.

MISSIONS AND OBJECTIVES

Our missions and objectives are:

- To provide a platform for the Malaysian scientific community across the world to discuss general scientific and research issues,
- To represent the voice of the Malaysian scientific community across the world,
- To provide valuable collective ideas in hopes to improve scientific research and development in Malaysia,
- To promote research collaborations or knowledge-sharing within the scientific community (both local and overseas Malaysian researchers) and/or with the industry,
- To inspire and provide guidance for early stage Malaysian researchers

HOW DID THE PROJECT BEGIN?

The idea for the Scientific Malaysian project came from the thought of finding ways for Malaysian scientific community currently studying/working abroad to contribute to the growth of research and development in Malaysia. In general, Malaysians abroad care about their home country despite being hundreds or thousands of miles away from

home. They actively seek and discuss ways to improve our country among their Malaysian peers. However, many of these discussions are left without much being done.

THE SCIENTIFIC MALAYSIAN WEBSITE

Many brainstorming sessions later, the idea was conceived and the Scientific Malaysian website is developed. To harness the benefit of technology and social networking, the site is built around that of Facebook. However, being hosted independently of Facebook, there is more room for improvements. We have a more organised online discussion platform, a customisable web layout and flexibility on various other features (such as being able to automatically track research publication output from Malaysia).

TARGET AUDIENCE AND STRATEGIES TO ACHIEVE OUR MISSIONS

We aim to attract memberships from any Malaysian involved in research and development, either in Malaysia or abroad. We do not restrict our members to those in pure sciences, as we do have members doing research in engineering as well. According to a report by The Star Malaysia¹, there are about 20,000 Malaysians working as researchers, scientists or engineers abroad and an even larger number is expected to be working as researchers in Malaysia. Non-Malaysian researchers who are doing research in Malaysia or abroad are also welcome.

The Scientific Malaysian website will be the focal point of interaction between members. Below is an outline of the various features currently available on our website:

- The “Forums” section, which provides a platform for discussion on various research issues in general or on-going researches in Malaysia. The forums can also be used for knowledge-sharing, whereby a researcher could seek advice from other researchers working in the same field.
- The “Activity” section gives members a bird-eye-view of all the activities on our website. Members are also encouraged to share interesting research-related articles, videos or photos using the “Activity Updates” feature, which is similar to that of updating Facebook status.
- The “Scientific Malaysian Magazine”, our scientific magazine that will serve as a platform for Malaysian scientific communities around the world to voice their opinions, share their experiences or stimulate discussions on various issues related to research.
- The “Events and Conferences” section gives our members an update on the various workshops, seminars, conferences and talks taking place in Malaysia and abroad.
- The “Research Highlight” section features publications by researchers in Malaysia and abroad.



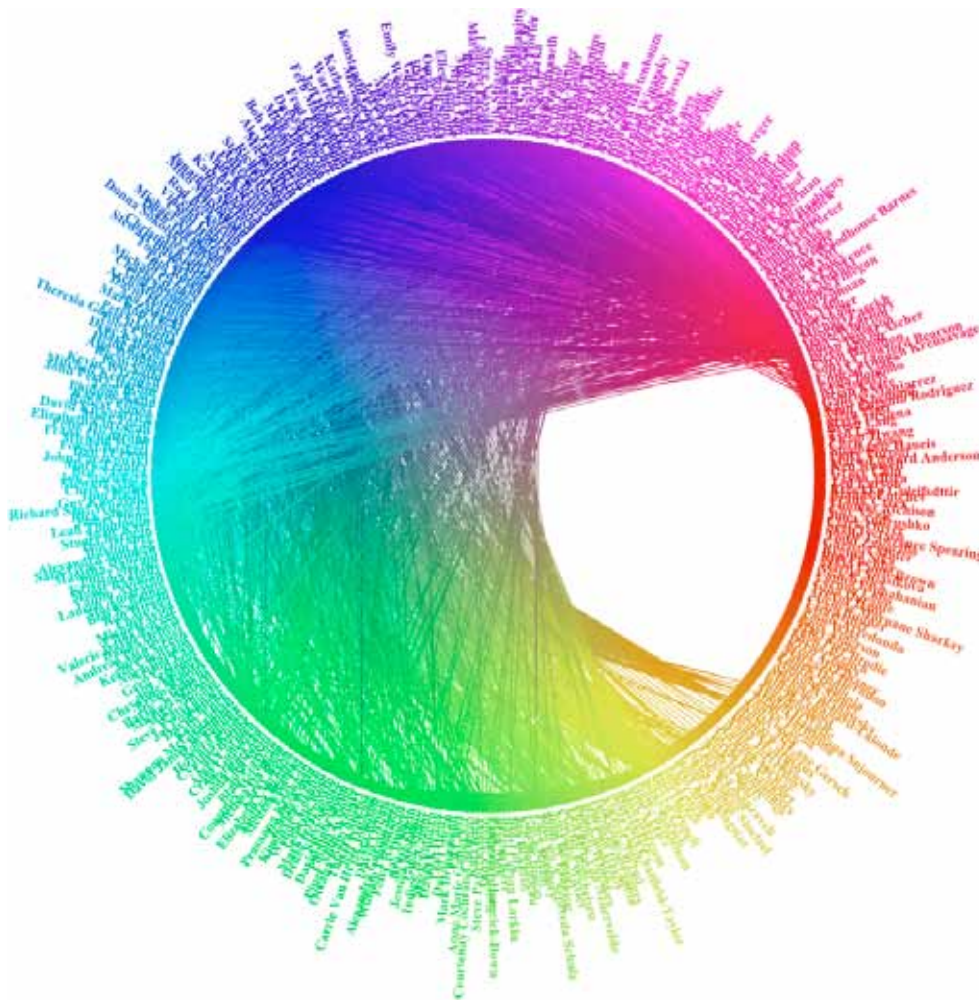
UPCOMING PROJECTS

In line with our aim to promote scientific collaborations among local Malaysian and overseas researchers, our upcoming “Project Collab” will serve as a directory for researchers to post about their research and to seek collaborations with researchers worldwide.

Malaysian researchers who would like to take part in this project should get in touch with us to be listed on our directory. Overseas researchers (both Malaysians and non-Malaysians) interested in research collaboration are also welcome. We also aim to approach various funding bodies both locally and internationally, who are interested in funding such collaborative research.

We are also currently planning to organise “Speaker’s Events”, consisting of various talks and seminars by established Malaysian scientists around the world. It is also within our plans to host a careers fair abroad in 2012 to promote Malaysian universities and scientific companies. We will soon announce these events on our website.

8 INTRODUCTION



CONCLUDING REMARKS – BUILDING BRIDGES

Scientific research and development in Malaysia is still lagging behind many countries, even among other third world countries. “Brain drain” is always an issue even for developed nations, and simply recruiting and bringing researchers back home is not the ideal solution, especially if the research environment is not mature enough. In fact, by bringing young and promising researchers home without being groomed adequately could backfire, stagnating their career growth and limiting their opportunities. We hope that the Scientific Malaysian project will act as the bridge, allowing promising overseas Malaysian researchers to continue their growth and contribute to Malaysia from wherever they are, by means of collaboration and knowledge-sharing with researchers and industries in Malaysia. Visit our website: www.scientificmalaysian.com or email us at admin@scientificmalaysian.com

REFERENCE:

[1] C Kok and LS Tee (2010), “Stemming the tide and keeping our talent”, The Star 6 Feb 2010. <http://biz.thestar.com.my/news/story.asp?file=/2010/2/6/business/5614304&sec=business>

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PERDANA UNIVERSITY GRADUATE SCHOOL OF MEDICINE: FACILITATING TRANSLATIONAL BIOMEDICAL RESEARCH IN MALAYSIA

by Dr Patti Gravitt

PERDANA UNIVERSITY, a medical university established in collaboration with the John Hopkins University School of Medicine was recently launched in Malaysia. Dr Patti Gravitt, an Associate Professor at the John Hopkins Bloomberg School of Public Health and the Vice Dean of Research of Perdana University Graduate School Of Medicine, gives us an overview of the university's research missions. Dr Gravitt also highlights the importance of translational medicine and how the School of Medicine at Perdana University aims to bring the advances in research from bench to bedside.

Biomedical research is at a crossroads. The turn of the 21st century has heralded unprecedented technological advance-

ments. The 'omics' revolution allows description of the molecular landscape of individuals with astonishing depth and breadth. We can now mine this landscape for molecular signatures of diseases, extending from basic the most basic genetic level to the vast complexity of the individual and their environment. The 'omics' revolution (genomics, epigenomics, proteomics, metabolomics) is redefining our understanding of the homeostasis between health and disease, risk, and therapeutics. While these exciting advances have resulted in exponential growth in biomedical knowledge and academic biomedical journal publications, proportional translation of these discoveries to improvements in human health is conspicuously absent

The barriers to effective translation of 21st century discovery have been debated in the biomedical literature. While there is no single cause for failure to translate, a consensus is forming



FAR LEFT
 Entrance to Hall D of Perdana University's interim campus.

LEFT
 The reception area of Perdana University, where the "Vision" and "Mission" of the university are displayed.

in the biomedical research community that traditional disciplinary approaches are insufficient to meet the demands of understanding the complex diseases that are the primary causes of global mortality. The research mission of Perdana University Graduate School of Medicine (PUGSOM) was developed to capitalize on a unique opportunity to redefine academic research to remove the disciplinary divide that contributes to the lag in the translation of the major academic discoveries of the last decade.

A successful strategy for building highly successful research programs in the past has been centered on recruitment of 'the best and the brightest' in a particular discipline. With an understanding that translation of the 'omics' discoveries will require significant cross-disciplinary collaboration, PUGSOM research development is based on a problem-centered philosophy. To begin, PUGSOM intend to target a limited number of major global health challenges that are of particular relevance to Malaysia, including emerging infections such as dengue and

chikungunya and non-communicable diseases such as major metabolic diseases (e.g. type 2 diabetes) and cancer. Development of successful research programs in these areas requires significant interdisciplinary team building through targeted faculty recruitment and development of collaborative networks of local and international investigators. The partnership of PUGSOM with Johns Hopkins University brings a wealth of intellectual and technological resource to the Malaysia-centered initiatives.



LEFT
 A sample of human specimens from the Anatomy Museum at Perdana University..



The partnership of PUGSOM with Johns Hopkins University brings a wealth of intellectual and technological resource to the Malaysia-centered initiatives.

Three critical components of these initiatives are aimed toward achieving a rapid advancement in translation of scientific discovery at all levels. First, PUGSOM will create both a physical and an intellectual environment that facilitates interdisciplinary communication, from the conception of a research problem to the translation to clinical or public health application. Bringing scientists from diverse disciplines together in the early stages of project development will ensure that the complexity of the translational problem is appropriately addressed. In this way, potential barriers to translation can be anticipated and strategies developed to maximize a seamless translation from one phase to the next. As an example, in the development of novel technologies for cervical cancer screening, there has been a historic disconnect between development of molecular tests with high analytic promise and the infrastructural requirements for collection of compatible samples. Aligning laboratory chemists with field investigators and practitioners ensures that technological innovation and ad-

vancement is placed in the context of real world clinical and public health resources.

Second, the high density of molecular data generated from the discovery 'omics' platforms, coupled with murky phenotypically heterogeneous disease states requires increasingly complex analytic methods of data reduction. The need for computational expertise in bioinformatics and systems biology is acute. PUGSOM intends to develop a strong Computational Biology Core (CBC), which will serve as an anchor for the interdisciplinary collaborative teams. Because of the global dearth of computational biology expertise relative to the generation of high-density data, development of the CBC at PUGSOM has the potential to catapult Malaysia into academic prominence on an international level. Training programs developed from the CBC are envisioned to make Malaysia one of the world resources for computational biology and bioinformatics.

Finally, effective translation of scientific biomedical discovery is realized when a measurable impact of a preventative or therapeutic intervention is realized. Clinical practice and public health policy are key factors that influence the realization of this goal. To that end, PUGSOM intends to create a Center for Translational Research (CTR), with a goal to develop

**LEFT**

The lecture hall in Perdana University with seating capacities for 200 people.

For more photos of the facilities in the interim campus of Perdana University, visit their official Flickr page at: <http://www.flickr.com/photos/perdanauniversity>

a strong clinical trials and health services research infrastructure. A key function of the CTR will be the development of state-of-the-art disease surveillance systems to readily describe the distribution and burden of disease in Malaysia will facilitate the implementation of Phase 2 & 3 clinical trials, attracting collaboration from the pharmaceutical industry, and facilitating program evaluation for future policy decisions that ensure the most cost-effective utilization of health resources. The leadership at PUGSOM, including the visionary partnerships between the Malaysian Government, Academic Medical Centre Sdn.Bhd. (AMC), and Johns Hopkins School of Medicine, has identified a unique opportunity to transform not only graduate medical education, but also the structure of academic research. To this end, PUGSOM does not seek to transplant an American version of research medicine to Malaysia, but to embody the transformational history of Malaysia by taking the opportunity to reassess the biomedical landscape of the 21st century

and realign the academic research goals with these new realities. In collaboration with the excellent research and academic institutions in Malaysia and abroad, PUGSOM aims to serve as a global model for translational research.

ABOUT THE AUTHOR

Patti Gravitt, Ph.D., M.S. is the Vice Dean for Research of the Perdana University Graduate School of Medicine (PUGSOM). Dr. Gravitt is an associate professor with the Department of Epidemiology at the Johns Hopkins Bloomberg School of Public Health. She is current chair of the Interdepartmental Program in Molecular Epidemiology at the Johns Hopkins Bloomberg School of Public Health. Dr. Gravitt received her M.S. in biology from the University of North Carolina at Charlotte and her Ph.D. in Epidemiology from the Bloomberg School of Public Health. Her goal at PUGSOM is to utilize her expertise in multidisciplinary research to develop research programs targeted to health problems important to Malaysia and SE Asia.

Dr. Gravitt's research interest is in the natural history of human papillomavirus (HPV) infection and cervical cancer and spans the public health spectrum from prevention to etiology. Her current projects include (1) Cervical cancer screening in India by community-based self-sampling and HPV testing, (2) HPV natural history in the menopausal transition, (3) the role of exogenous hormone use on HPV acquisition and clearance, (4) the natural history of HPV in the early HIV seroconversion period, (5) the role of female sex hormones on immunologic response to HPV, and (6) the interaction between helminth infection and lower genital tract immunity and HPV persistence. Prior to pursuing her doctoral degree, Dr. Gravitt developed the current gold standard PCR methods for HPV DNA detection and genotyping at Roche Molecular Systems, Inc.

UNIVERSITY RANKINGS: TO BE OR NOT TO BE

by Wong Kah Keng

THE RAPID GROWTH in the demand of access to higher education has sparked the demand for information on academic quality across the globe. The university rankings system has so far served as a rough guide to help prospective students make informed choices. Besides, the lucrative business in the higher education sector has induced global competition to attract the highest quantity and quality of students, and the university rankings system has assumed one of the key roles in achieving this prospect.

However, the university rankings system has continued to face criticisms and there has not been an international consensus on the measurement of teaching and research quality in these rankings. All rankings are imperfect. One may want different rankings for different purposes such as ranking by research versus ranking by teaching. Even rankings for the same purpose, research or teaching, there is no consensus on which factors are important, how to measure and weigh them. The public would dispute the criteria used for an individual ranking, even though both of these methods are used in some international rankings:

1) **Objective approach:** an evidence-based system that gathers a welter amount of information based on input measures (e.g. entry standards) and output measures (e.g. unemployment rates, quality of research by scholars), and crystallise them into a ranking. While this approach might get fine-grained detail “wrong”, it nevertheless gets the broader coarse-grained ranking decently accurate.

2) **Subjective approach:** a system based on word of mouth, employers’ or students’ feedback, and peer reviews, all of which are gathered from a limited number of people or selected authorities. This methodology runs the risk of prejudices and criticisms.

Thus, rankings often end up based on what is quantifiable rather than what is truly important. However, there are several aspects of university rankings that confer their accuracy.

The main strength of rankings is the positive correlation between different rankings based on various criteria and weights. For instance, between the rankings of United Kingdom universities in the international and UK-based rankings. The precise rank in which a university appears varies from table to table but there is still a high correlation. One may be unable to tell precisely which university is ranked 30th or 35th in the world based on international rankings, but these rankings are still informative in distinctively differentiating between the universities in the top 30 from those in the top 90, and more so as the gap widens.

It is also wise “not to let the best be the enemy of the good”, that is getting obsessed





It is also wise “not to let the best be the enemy of the good”, that is getting obsessed about the fact that some rankings aren’t perfect or fair in certain aspects that one abandons them altogether...

about the fact that some rankings aren’t perfect or fair in certain aspects that one abandons them altogether and so, loses out on the helpful information they can impart. In the absence of rankings, it is possible to drift along in comfortable mediocrity. Rankings force universities to think hard about what they will do and the result of their achievements is reflected in the next cycle of various, cumulative rankings. It might be wise for a university to have an ambition of striving to improve in several different league tables rather than pottering along in one’s own world blissfully unconcerned about rankings.

However, the pros of University rankings do not pale the cons into insignificance.

The university rankings that gain a lot of public attention could exacerbate the competition and rivalry between universities, thwarting cooperation in the process. For instance, as far as research is concerned, especially of biomedical or fundamental sciences, it is a long shot for a laboratory consisting of a limited number of tools, specimens and specialised researchers to produce research of high-end quality. It is a known phenomenon that modern research requires an enterprise of collaboration to reach an overreaching discovery, and thus any potential collaboration should not be





barricaded by the mere issues caused by rankings. Both sides of institutions should realise the mutual benefits gained from concerted efforts and should at least be in a neutral position, if not effusive, when the opportunities for collaboration arise.

Careful interpretation of university rankings also needs to be exercised. The public and media should be motivated by the fact that there is no “holy grail” of rankings. Assessment on the quality/quantity of research reflected in virtually all international rankings has overlooked scholarly publications in languages other than English in citations data. There are several scientific journals published in German, Japanese, French, Chinese or Russian but very few of these papers have been considered in interpreting bibliometric data nor inclusion into the Science Citation Index (SCI)¹, thereby likely not regarded as accepted “standards” set by the policy makers of university rankings. This language-bias problem has been downplayed in the rankings.

In addition, the funding bodies for researchers should not be heavily influenced by a handful of rankings but rather through assessing the groups on a case-to-case basis. There is no research group that could solely catapult a university to the top nor gravitate it to the bottom tier of a league. Generalisation of the group’s potential based on the university’s position in the ranking might not be accurate.

Judging from the continued publications of global university rankings since nearly a decade ago, and the attention received each year by the media and public, university rankings are here to stay. They will continue to influence the landscape of higher education worldwide, affecting not only the decisions made by students or providers of education, but also the educational policies decided by the government.

Finally, it is undisputable that rankings have motivated the attempts of producing more elite universities. However, these leagues could only bring the true value of a university so far, as the core motivation and the persistency for an academic to labour on is the genuine passion for his/her field of research and teaching, even when the university is at the top of any leagues. It is hoped that in the course of improving the local universities’ standing in rankings, the chance of discovering these pool of *bona fide* talents and sparkles could be accrued.

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[1] van Leeuwen TN, Moed HF, Tijssen RJW, *et al.* Language biases in the coverage of the Science Citation Index and its consequences for international comparisons of national research performance. *Scientometrics* 2001:51:335-346.

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FREE RANGE/ ORGANIC EGGS

Is it as “green and clean” as it marketed to be, or is there a sinister secret good-intentioned consumers are unaware of? By Sarena Che Omar.

SO WHY ORGANICS?

The “organic” fever hit developed nations about a decade ago. The amount of organic food sold in the market is often directly proportional to the nation’s wealth and purchasing power. This is because the production style of organic food tends to result in being pricier than conventional mass agricultural productions. Despite the higher price of organic food, consumers in wealthier countries are willing to pay extra on the basis of ethics, welfare or belief in added health advantages. As Malaysia continues to grow and prosper, we begin to see this trend budding in the richer areas of Malaysia, especially in the Klang Valley. However is it truly a “guilt” free, clean food product and can the production of organic food be sustainable in feeding the world’s population?

One perfect scenario of organics gone wrong is the free range/organic eggs story. Chicken, or its scientific name *Gallus gallus* originated from Southeast Asia with its wild ancestor, known locally as “Ayam Hutan” (literally translates to “jungle chicken”), which still lives today in the Malaysian jungles. Its earliest domesticated breed, called “Ayam Kampung” (literally translates to “village chicken”) has changed little since its first domestication between 40,000 to 50,000 years ago, proven through mitochondrial genetic studies¹. It is interesting to further note that their domestication occurred not long after the earliest human migrations into Southeast Asia (a humbling extra fact: our Aboriginal People or “Orang Asli” are one of the few

remaining ‘races’ of the earliest humans)². Due to subsequent human civilization and population growth, chickens are now spread worldwide and within the last 100 years, they come in hundreds of different specialized breeds: laying eggs (layers), meat (broilers) and even as pets (show breeds such as the popular “Ayam Katik/Bantam”).

THE RISE OF THE SUPER-BREEDS

Human population growth and consumer demand significantly changed the egg-laying breeds we have today. In United Kingdom alone, 10 billion eggs were consumed last year³. To meet this high demand, humans have been selectively breeding chickens to produce more eggs with better quality at higher efficiency. For example within a short span of 60 years, while “Ayam Kampung” can only lay about 25 eggs per year, the super-breed ‘ISA Brown’ can produce an astonishing 300 eggs per year⁴! However, it is important to note that throughout the years of selection, these super-breeds were raised in a caged environment for various practical reasons. The caged system is useful in regions where land is limited. It also has the ability to control temperatures and pests. Indeed, chickens having originated from Southeast Asia cannot



It is ironic, that due to a few bad apples (cruel caged farming not following recommended guidelines), the caged

system has a bad reputation, forcing farmers to change to the free-range system that in turn, causes more harm than good to these animals.



18 OPINIONS

cope with a typical Russian winter or the midday heat of the African deserts. A caged environment also means that the farmer has full control over the chicken's diet, contrary to an outdoor chicken that can easily contract parasites and diseases by pecking on infected soil⁵. Despite this, within the last decade, there is a sudden shift in farmers having to change from caged eggs to free range or organic egg due to consumer demands. Passionate activists fed the public with the idea of cruel, suffering caged hens and that a free-running chicken is a happy chicken. No doubt the intentions were genuine, however often in big industries, drastic changes cannot be based on feelings and instincts alone, but must be backed by scientific data.

The basic concept of animal breeding and genetics is that an animal's genes and the environment it lives in interact (termed as "gene-environment interaction") to produce the final phenotype or physical characteristics. This means that an egg-laying breed such as the "ISA Brown" or "White Leghorn" have had its ancestors of hundreds of generations, bred in



a caged environment, thereby losing genes or behavior suitable for its original natural environment. This includes living in a controlled, optimum environment, without the need for socializing, without problems with predators and without weather stress. Thus when such breed is suddenly forced to live outside in an environment similar to its wild cousin, these "city" breeds cannot cope with the added stress. As an analogy, imagine breeding for hundreds of generations, a line of human royalty living in utmost luxury. Then, rationalize that a human's natural place is in the jungles and proceed to force these royalties to live back in the jungles, thinking they will lead a happy healthy life. Similar situations occur with these super-breeds that are commercially farmed worldwide. Europe, where the free-range culture originated, is where this phenomenon is most studied. Over the last decade, egg-laying breeds that



TOP
A battery cage egg farm with an escaped hen on the walkway between the tiers of battery cages.

LEFT
Layer breed chickens at a free range in Polyface Farm, Virginia, US.

were forced to live in a free range environment exhibited extreme stress, significantly higher mortality rate and cannibalism relative to conventional cages! In a typical caged farm, there are more than 5000 (often more than 10,000) chickens raised in stacked cages. When the farm is converted to a free range environment, it demands more land than a farmer can afford to buy. This causes an unacceptably high chicken density, causing again more stress and mortality. To make things worst, cannibalism due to stress was so severe that most non-caged farmers had to resort to de-beaking, a procedure of cutting the beaks of a live chicken to prevent it from pecking and hurting another. This phenomenon is scientifically recorded and published in over 20 articles, yet in a world where food production is driven by consumer demand, free range eggs continues to be the average European choice^{6,7,8,9,10,11}

It is ironic, that due to a few bad apples (cruel caged farming not following recommended guidelines), the caged system has a bad reputation, forcing farmers to change to the free range system that in turn, causes more harm than good to these animals. However, all is not lost, as the best solution is to breed hens specifically for each environment, such as a specialized free-range chicken that has less cannibalistic, but more social behavior^{12,13}. Quantitative Trait Loci, which is the search for a correlation between feather pecking behavior and genetics, has already been identified. Consequently, scientists such as those from Oxford University are working hard with University-owned organic farms to produce a breed made especially for the free range environment¹⁴. Additionally, while conventional caged chickens will be banned, a new similar system using specialized cages called “furnished cages” will be allowed¹⁵. This type of cages is an upgrade from conventional cages as it allows more room to move and

mimics a roosting environment, but at the same time avoiding undue stress that an outdoor environment causes. It is hopefully a true win-win situation for both welfare-concerned consumers and the chickens themselves.

The lesson to learn here is that in most large-scale industrial processes, there is more than meets the eye. We

WHAT IS YOUR VERDICT?

CASE STUDY:

New Zealand has a similar total land size as Malaysia (26 million hectares and 33 hectares respectively).

Out of these lands, only 23% of forests remain in New Zealand (naturally at 80%), as opposed to 66% in Malaysia. Despite having lesser land deforested, Malaysia is home to 28 million people while New Zealand is a mere 4.4 million.

According to the global poultry industry (www.thepoultrysite.com), statistics in 2008 showed that New Zealanders consumed 990 million eggs per year (225 eggs per person/year), while Malaysians consumed a whopping 7 billion eggs per year (280 eggs per person/year)^{16,17}!

According to the European regulations, a free range farm must not have more than 2500 hens per hectare. On the other hand, a regulated, responsibly maintained caged farm can hold up to 20 000 hens in half a hectare!

So if we assume one hen can lay between 200-300 eggs per year, do the math.

CONCLUSION:

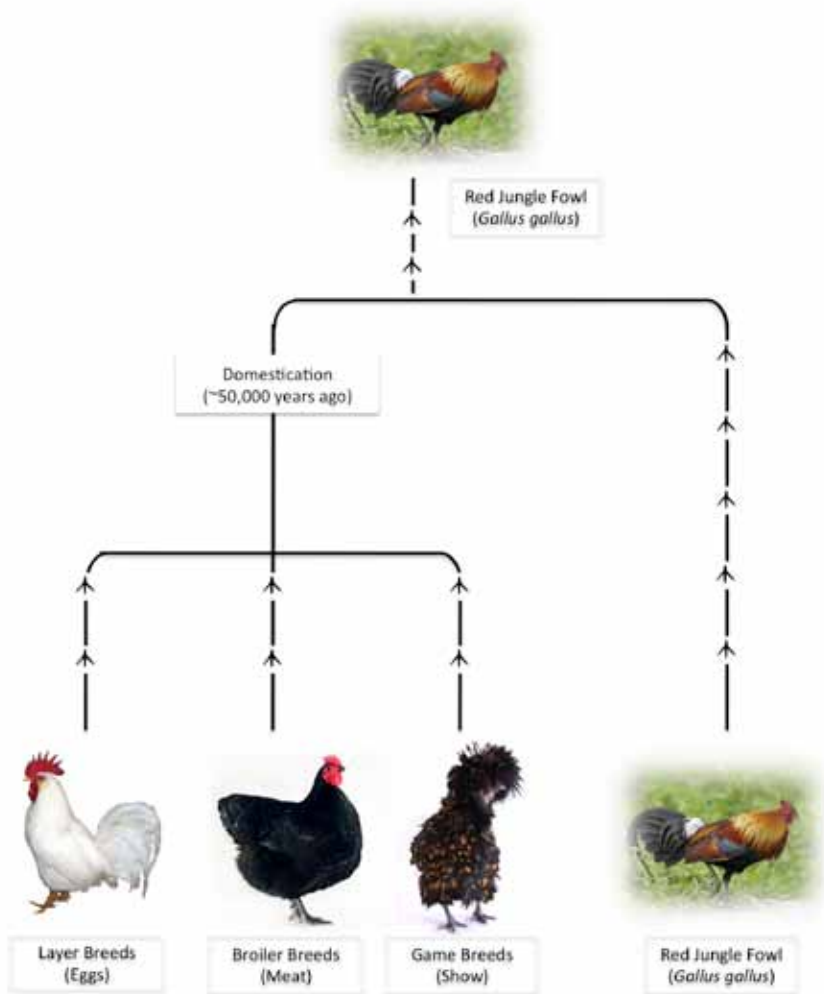
While it is possible to implement free range eggs in New Zealand, it is unrealistic to adopt the same housing system in Malaysia unless we deforest the remaining of our precious rain forests.



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LEFT

An illustration of the chicken evolutionary tree. The ancestors of all breeds available today, are still living in the wild Southeast Asian jungles.

cannot make decisions based on a few pictures of animal cruelty and on emotions alone without any scientific backing. Another important factor to remember is that ever since humans started agriculture 20,000 to 50,000 years ago, we have long diverted from being “natural”, as natural in its most basic definition to humans, means continue living in the jungles with a hunter-gatherer lifestyle. Agriculture is simply to artificially allow an optimum environment so that the most food can be harvested to feed a constant increase in food demands. Industrialization is essential to feed an over-populated world. No doubt that the best tasting eggs are those from “Ayam Kampung” and sweeter fruits from our backyard or “Kebuns”, however realistically not every human in the world especially in cities can have the luxury to own chickens and grow fruit trees, unless we are willing to conduct more deforestation, which defeats the purpose of being clean and green!

Disclaimer: *The author does not condone animal cruelty in ANY situation. Irresponsibility and cruelty can occur in any animal husbandry systems.*

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FEATURED MEMBERS

One of the missions of Scientific Malaysian is to foster research collaboration and encourage members to build network. Here, we highlight some of our members and their research areas.

DR MOHAMMAD ASIF KHAN is an Assistant Professor in Bioinformatics at the Perdana University Graduate School of Medicine (PUGSOM), with an adjunct Assistant Professor appointment at the Department of Pharmacology and Molecular Sciences, Johns Hopkins University School of Medicine (JHUSOM), USA. He obtained his PhD in Bioinformatics from the National University of Singapore (NUS), and did his postdoctoral fellowships at both NUS and JHUSOM. He also held a visiting scientist position at the Immunology Frontier Research Center (iFReC), Osaka University, Japan, under their Young Researchers Program.



Dr. Khan's research interests are in the areas of biological data warehousing and applications of bioinformatics to the study of immune responses, vaccines, venom toxins, drug design, and disease biomarkers. He has authored/co-authored a total of 25 research and review articles (as of August 2011) in various international journals and conferences, and has presented his work at numerous international conferences. He was involved in the development of several novel bioinformatics methodologies, tools, and specialized databases, and currently has three patents filed.

Dr. Khan's teaching experiences (2006-2010) have been in bioinformatics, imparting to undergraduate/graduate students at NUS (~1568 students), and has assisted in the supervision of research projects of more than 50 students (45 bachelors, 6 masters and 3 PhDs). He has also co-authored two bioinformatics pedagogy related papers and a book chapter. He will teach the bioinformatics components of the Genes to Society Curriculum at PUGSOM.

Dr. Khan is a new member of the Scientific Malaysian portal and is excited to be part of the community. He finds it as an excellent, one-stop platform to help connect Malaysian researchers and also the global community with interest in partnering with Malaysian researchers. He looks forward to connecting with other members who share common research interests.

Find out more about Dr Khan by visiting his ScientificMalaysian profile at:
<http://www.scientificmalaysian.com/members/asifkhan/profile/>

TIM NAM MAK is a PhD student at the Max Planck Institute for Infection Biology, Berlin, Germany. He holds a BSc (First Class Honours) in Biotechnology from Monash University Malaysia. He did a summer research project in 2005/2006 at the Australian National University, Canberra, working on the cloning and protein expression of nematode specific genes in *Caenorhabditis elegans*. In his honours' year in Monash University Malaysia, he worked with Associate Professor Song Keang Peng on the characterisation of a putative virulence factor from oral pathogen called *Porphyromonas gingivalis*, which contribute to severe periodontal diseases.



In his PhD project, Tim is working primarily on a controversial opportunistic bacterium named *Propionibacterium acnes*. He focuses on the host cell interaction associated with this bacterium as it remains unclear how a host responds towards an invasion by this bacterium. He is also interested in investigating the bacterium's potential involvement in causing other diseases, such as *acnes vulgaris*, sarcoidosis and prostate related diseases.

Tim feels that Scientific Malaysian will serve an important hub for all Malaysian researchers to contribute and to improve scientific research in Malaysia.

Find out more about Tim by visiting his ScientificMalaysian profile at:
<http://www.scientificmalaysian.com/members/timnam/profile/>

GHOWS AZZAM is a DPhil student in Physiology, Anatomy and Genetics in the University of Oxford. He previously did his Masters in Developmental Cell Biology (with Distinction) at the University of Sussex, United Kingdom, where he published a paper in *Development*. He also holds a Bachelor's degree from Universiti Sains Malaysia (USM).

Ghows' current research work is on microRNAs. MicroRNAs (miRNAs) are ~22-nucleotide long endogenous short non-coding ribonucleic acids that can regulate gene expression in animals and plants by degrading or repressing the target messenger RNA (mRNA). Recent advances in genetic and genomic studies have indicated that miRNAs play important roles in many aspects of the cell and animal development especially in gene regulation. Cellular activities such as proliferation, morphogenesis, apoptosis and differentiation are regulated by miRNAs.



He uses the classic model organism, *Drosophila melanogaster* (fruit fly) in his research. *Drosophila melanogaster* is one of the most studied organisms and has been used for over a century for research particularly in genetics, cellular and developmental biology. The aim of his study is to understand the function of the proteins that is required for miRNA biogenesis in the development of *Drosophila melanogaster*, focusing on the female germline.

Ghows feels that the idea Scientific Malaysian is great because it provides an opportunity for Malaysian scientists across the world from different disciplines to come together and discuss various topics. Although this project is still at its early stages, its future prospect is bright. This portal could be use for brain storming, discussing experiments, findings or even to start new collaborations.

Find out more about Ghows by visiting his ScientificMalaysian profile at:
<http://www.scientificmalaysian.com/members/mohdghows/profile/>

HOOI LING LEE is a PhD researcher (Surface Science) in the School of Physical Sciences, Dublin City University (DCU), Republic of Ireland. She holds a MSc degree by research from the School of Pharmaceutical Sciences, Universiti Sains Malaysia (USM), where she worked on the formulation and evaluation of a rapid emulsifying dispersion system for docasahexaenoic acid (DHA) in her research project. She graduated with Bachelor of Applied Science (Hons) from USM with a major in Industrial Chemistry and a minor in Management.

In her PhD research, she works on the formation and characterization of covalent-bonded nano-networks on metal surfaces under the ultra high vacuum (UHV) conditions. The characterization methods employed in her investigation include synchrotron radiation techniques, scanning tunneling microscopy (STM), low energy electron diffraction (LEED), x-ray photoelectron spectroscopy (XPS) and ultraviolet photoelectron spectroscopy (UPS). She performed her synchrotron work in the Institute for Storage Rings Facilities (ISA), Aarhus, Denmark and MAX Lab in Lund, Sweden.

Hooi Ling has also worked as a lab demonstrator in DCU. Recently, she has established collaboration with the Institut Matériaux Microélectronique Nanosciences de Provence (IM2NP) in Marseille, France. In 2007, she was in Nancy, France for four months to do some experimental work in their laboratories under the Égide-USM sponsorship. Before she embarked in her PhD programme, she was a research officer in USM. In addition, she was also a part-time lecturer in the School of Distance Learning in USM for a year. During her leisure time, Hooi Ling loves travelling and salsa dancing.



Hooi Ling views that the "birth" of Scientific Malaysian is indeed very timely. "Think Globally, Act Locally" was the first impression that she had when she was introduced to this project. She hopes that this site will serve as an excellent "one-stop" hub for Malaysian scientists abroad as well as local from different disciplines to exchange ideas and possibly to initiate collaboration among the scientific communities.

Find out more about Hooi Ling by visiting her ScientificMalaysian profile at:
<http://www.scientificmalaysian.com/members/hooiling-lee/profile/>

HIGGS AND THE KITTEN

by Yi Ling Hwong



One year ago before I came to CERN I had no idea what the Higgs boson was, I thought a wormhole is where birds are sent to when they die and Quark is a kind of food I like. I thought life was the biggest concoction of coincidental and wicked confusion, until one day someone tried to explain the string theory to me.

I had no expectations, no worthy predictions of what this place had in store for me and I was living in an apartment with a kitten that chased her tail and thought she was a dog. I had never lived with an animal under the same roof before, at least not with one that snarls at me when I accidentally step into her imaginary turf.

Unfamiliarity can be a pain, and in my case this pain comes in the form of a hypothetical particle and a purring creature. They're both unpredictable, volatile and I can't decipher them with my engineer-gearred mind where "hypothetical" is a shunned word and used only when you have no idea what you are talking about, and a string is really just that – a string. I felt like someone just threw me into a whirlpool akin to the infinite improbability drive¹ and asked me to engineer my way out of this whimsical maze. The Higgs and the cat suddenly seemed

like two monsters disguised as science, waving their "hypothetical" paws at me and I couldn't decide if they are really as harmless as they seem to be. And it drove me crazy.

But just like how all adventure tales end, over time I realized that even the scariest monster can be tamed if you are determined enough (or in some cases, if you are a whiny teen with a scar on your forehead and your enemy dies by committing suicide). I didn't have my crystal ball with me when I arrived, but even without it I knew that I could only survive if I opened myself up to find out as much as possible about my enemies.

Armed with the age-old wisdom of "Keep your friends close, but your enemies closer", I set out on a mission to acquire as much knowledge as I could about the unpredictable Higgs and kitten. They were the symbolic representations of everything that was mysterious, incomprehensible and unfamiliar to me, and I couldn't wait to reveal their darkest secrets. Unfortunately for me, I am not a scientist, nor an animal trainer. And the most interesting experiment on the topic of mind reading I have ever done involved me and my 6-year-old brother, some poker cards and a mirror.

So even if the Higgs and the kitten are, metaphorically speaking of course, unfamiliar territory, I knew that I would have no choice but to face it head on. And that is where the beauty of CERN lies.

THE DETECTIVE

by Wong Kah Keng



*“Rolling in the deep,
You had my heart inside your hand,
But you played it with a beating”*

Mixture of the pop song from the radio and the ventilation noise from the tissue culture hood fills the air of a small, rectangular-shaped room. The most precious tool within the laboratory, the pipette, was firmly-held in his left hand while various other flasks, tubes, containers were shifted intensively. Hands gloved and labcoated, Justin had been manipulating the cancerous cells since the crepuscular hours. The cells had to be grown in a sterile environment - confined within plastics or glasses - the living conditions tantamount to those endured by the Bubble Boy¹. His nose inadvertently came in contact with the window glass of the hood, leaving a spot of sebum that partially blurred the vision, forcing him to abandon whatever he held within the hood to clear up the spot with 70% ethanol.

As the cells were spun down by a centrifuge, he finally had a small moment of break. Looking through the

¹ - David Vetter (1971-1984), from Houston (USA) and widely-known as the Bubble Boy, had a genetic disease known as severe combined immune deficiency syndrome (SCID). The disease crippled his immune system, rendering him defenceless against environmental pathogens or agents. He was forced to live inside a bubble-like structure to prevent contact with these foreign agents. He passed away at the age of 12 after a bone marrow transplant from his sister containing traces of Epstein-Barr virus that caused Burkitt's lymphoma, an aggressive subtype of blood cancer.

only window in the room, he spotted beige-coloured leaves falling from the tree as the wind blew.

Autumn. He thought. *The third autumn.*

He was in his final year of PhD studies at the Whiteforest Institute of Cancer Research (WICR). For the past 2 years, the serendipity of research that he so hoped for, the eureka moment when he would run across the corridor like how he would run his heart out for the 100 metres rally representing his state, reaching Professor Stephen's room and exclaimed "I got it", had never occurred. He imagined this to happen within the first five seasons upon his arrival at Whiteforest. This was the third time he repeated the exact same experiment to prove a model he proposed, and if the results showed a consistent pattern, it would mean an incorrect model. They call it the 'negative' result. A false alarm.

The model is theoretically sensible. There must be a loophole I have missed out. Justin thought, his lips moved without voice.

"Don't be too bored and talk to yourself- I am joining you," Han-Wook the Korean Master's student appeared without his notice.

"Annyung haseyo," Justin said instantly.

"Ah you must have picked this up from yesterday's event."

"Yup. I was also dressed in a Hanbok."

"Did you like it?"

"Yes, definitely more comfortable than a labcoat!"

Both laughed, almost superficially.

"So, prepared for the practice talk?" Wook, referring to the practice talk for an inaugural Divisional seminar catered to all postgraduate students at Whiteforest.

"You bet I did. I got them prepared long before yesterday's 'Soul of Seoul' event."

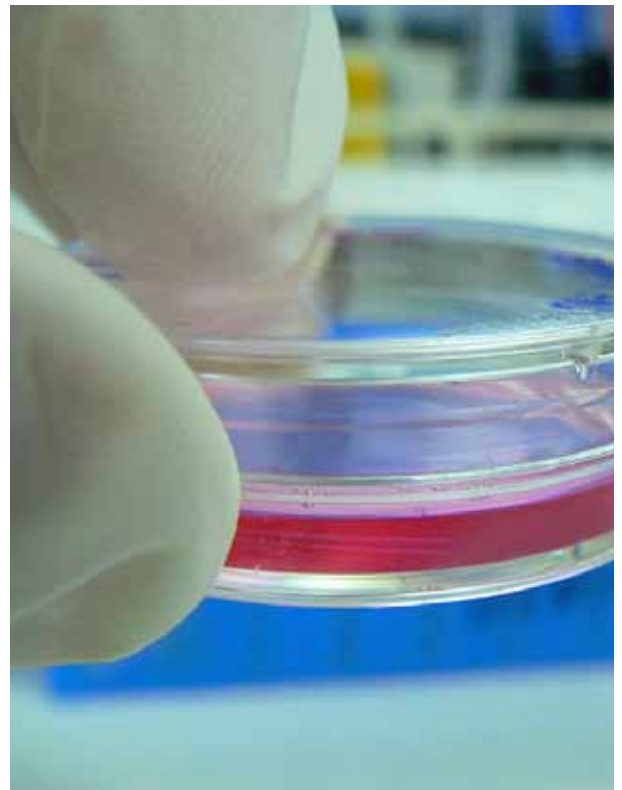
"Ah, that's cool," sensing some pomposity, Wook decided to end the conversation and retreat to the cell culture hood next to Justin's.

The room escalated into a prolonged awkward silence contrasting the earlier 'laughter'.

"Hey Justin, busy in the hood?" Arnold, famed as the Terminator in the Institute, appeared at the door of the cell culture room.

"Yes Arnie, obviously."

"Stephen just circulated an e-mail that your practice talk



has to be brought forward to 11 a.m., which is within 2 hours from now. Is that okay with you?" asked Arnie, knowing that Justin had the hood booked until noon.

"Yes, absolutely."

"Okay, I will inform everybody else then."

"Thanks Arnie."

Alright, time to revise the prepared 46 Power Point slides for the real "show". This is the fun part.

To be continued...

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